

Property Value Information Systems (PVIS): A Glocal Perspective

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Introduction

- We live an information-soaked existence and information pours into our lives through television, radio, books, and of course, the Internet.
- The present context of our everyday life experience can be compared simply with the existing universe of knowledge, the empire of information and the kingdom of data.
- But what does it mean in practice? And what are the benefits of adopting a data-driven culture within an organisation?
- **To mean Glocal--**
--Where or how to start? From any where, here, there or everywhere. That we call a location. An address which is unique. Same as we all have names and identities. Just we all are locals. Most of our activities are also local. But at the same time we have to think globally. Our modern day practitioners are habituated to be local actors with a global mind.

The Data Driven Property Value

- According to statistics, in developed countries, the value of land and real estates together with mortgages on properties is about 60-65 % of the national asset. The land and property related activities, including property developments, generating about the 30-35 % of the GDP. The value of mortgages on properties in developed countries is 30-35 % of the GDP
- Hundreds of asset managers try to make strategic and tactical practices to determine portfolio and asset value from acquisition to sale, encompassing all aspects of the asset management life cycle in the process with a continuously updated vision of all real estate, financial and accounting information regardless of the physical location of the investments
- As a survey revealed the strong link between financial performance and use of data, organizations can be empowered with data democracy in action.

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Justifications

- Information empowers and information frees people at all levels of society, regardless of their gender, their level of education or their status, to make rational decisions and to improve the quality of their lives
- For this reason data specialists will remain an essential part of BI especially of Geospatial business intelligence communities for analytical tasks particularly for predictive modeling, acceleration, workforce performance and standard conformance equipped with sophisticated knowledge and intelligence in practice.
- These reveal the prevailing justification of the property value information systems. Here lies the rationality of inherent value of data and information.

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Property Registration and Value Data Components

- Registration is a wider public sector exercise of any civilized country in the modern globalized world for making use of sequential, legal and systematic recorded data for personal, social, business and commercial or any other general needs to ensure evidence based transparency. It is a very important and influencing part of law discipline which embraces public life everyday. Over the centuries registration covers most of human and citizen activities ranging from birth registration to death registration (Razzak. Dr. M.A 2008).

- **Property Registration Data Components**

- Deeds Registration

- Title Registration

- Records and Archives

- Evidence based Transparency

- Location Profiling

- LIS & GIS

- Standards & Compliance

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The Data Distinction : Price, Market, Cost And Value

- When estimating the value of land or property, appraisers make a careful distinction between the terms price, market, cost and value.
- The term price usually refers to a sale or transaction price and applies to an exchange: a price is an accomplished fact. A price represents the amount that a particular purchaser agrees to pay and a particular seller agrees to accept under the circumstances surrounding the transaction.
- A market is a set of arrangements in which buyers and sellers are brought together through the price mechanism. A market may be defined in terms of geography, products or product features, the number of available buyers and sellers, or some other arrangements.
- The term cost is used by appraisers in relation to production, not exchange; cost may be either an accomplished fact or a current estimate.

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Property Data Relationships : Price, Market And Property Value

- Price, market, and cost relationships also incorporate concepts of value. Value can have many meanings in real-estate appraisal; the applicable definition depends on the context and usage. In the market-place
- Value is commonly perceived as the anticipation of benefits to be obtained in the future. Because value exists at a given moment, an appraisal reflects value at a particular point in time.
- Value at a given time represents the monetary worth of property, goods, or services to buyers and sellers. To avoid confusion, appraisers do not use the word value alone; instead they refer to “market value”, “use value”, “investment value”, “assessed value”, or other specific kinds of value.
- Market value is the focus of most real-property appraisal assignments and its estimation is the purpose of most appraisals.

Location Profiling

- The valuers should identify the way that all the property should be used and be based on the predictable requirements of the community. The basic outline plan for a given area should then specify for finding justification
- **Factors affecting Property Value**
 - Areas to be in compliance with building regulations
 - Commercial areas for the supply and distribution of goods and services;
 - Public areas with facilities for hospitals, schools, churches and cemeteries, serving the medical, educational, religious, social and cultural needs of the community;
 - Route ways for local major and minor roads and for long distance transport, and areas for parking lots;
 - Areas for railway and tramway services;
 - Areas for utility infrastructure, including the main networks for water, gas, electricity, and central heating;
 - Areas for sewage, waste management and refuse disposal, and for waste-water purification;
 - Hedonic Fluctuation Factors

Major Property Value Standards And Professional Valuers

- Consistency, objectivity, quality, validity, reliability, standard and transparency are fundamental to building and sustaining public confidence and trust in property value data systems. In turn their achievement depends crucially on possessing and deploying the appropriate skills, knowledge, experience and ethical behaviour, both to form sound judgments and to report opinions of value clearly and unambiguously to clients and other users of property value data..
- Globally recognized high level valuation principles and definitions are now embodied in the International Valuation Standards (IVS) published by the International Valuation Standards Council (IVSC), International accounting Standards (IAS), ISO, FIG and RICS are remain devoted partner in the development of such universal standards, and not only fully embraces them itself, but also proactively supports their adoption by others around the world. IAS and IFRS standards and their application areas are as follow : a. IAS2 applies for Inventories, b. IAS11 applies for Construction Contracts, c. IAS16 applies for Property, Plant and Equipment, d. IAS17 applies for Leases, e. IAS40 applies for Investment Property, f. IAS41 applies for Agriculture and g. IFRS6 applies for Exploration for and Evaluation of Mineral Resources. The European Group of Valuers' Associations (TEGoVA) also offers a good number of EVS standards for applying in practice in finding property value data systems.

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Property Value Information Systems (PVIS)

- Property value information are the scientific products or property value data (PVD) prepared by applying property valuation processes on evidence based property data (PD) with different classes of properties in a jurisdiction or neighborhood determined for a certain period of time. The system involves laws, regulations, authorities, institutions, scientific valuation methods, approaches and processes, techniques, tools, professionals, technologies, standards and related services for public and private use in local, national, regional and international communities and economics.
- The PVIS represents its core platform application of Property Value Data Model (PVDM) The system requires 4-D implementation strategy.(Diagram Included)

Define identifies property value and IT concepts, issues, features, collection of primary and secondary data, data analyses, study and research results, existing knowledge base, , assessment of needs, cost, resources, risks, possibilities, documents, datasheets , terms and glossary, other related materials and publications.

Develop includes components, recording property value data, digitization of databases, plans, measures, maps, policies, laws, regulations, infrastructure, standards, codes, research, professional ethics, valuation methods, technologies, applications and solutions, techniques, tools, procurement, institutions, human resource and capacity building.

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PVIS Modelling Continued....

- **Deploy** involves practical implementation programs for acquisition and preservation of property value databases for disseminating to the user community in its own web or mobile interfaces using public key infrastructure (PKI) through property or personal identification number (PIN) codes on an authentic and secured platform. The Implementation platform include the following steps (i)Enterprise Architecture,(ii) IS Strategy, Management and Acquisition,(iii) Information Standard and Compliance, (iv) Marketing Strategies, (v)Database Management, (vi) Systems Analysis and Design, (vii) IT Infrastructure with PKI, (viii) IT Project Management, (ix)Applications Development,(x)Business Process Management,(xi) Collaborative Computing, (xii) Data Mining,(xiii) Geospatial Business Intelligence.(xiv)Enterprise Systems,(xv)Human Computer Interaction,(xvi) Information Search and Retrieval. (xvii) IT Audit and Controls,(xviii) IT Security and Risk Management,(xix) Knowledge Management and Cloud enabled Big Data,(xx) Social Informatics.
- **Deliver** makes all core property value data and support databases available for access from the PVIS. The success of a PVIS is not dependent on its legal or technical sophistication, but whether it protects enhanced practice of property value data and rights to fair value adequately and permits those rights to be traded (where appropriate) efficiently, simply, quickly, securely and at low cost.

Steps for Achieving PVIS Implementation Goals

- **Documentation**

While Market Value exists independently of documentation, a professional valuation under this standard should be properly recorded in writing in a way that is transparent and clear to the client in accordance with EVS4 and to anyone else who might reasonably seek to rely on it or appraise it.

- **Interfaces**

--Physical interface includes manual operation and physical infrastructure, curation and preservation arrangements

--Digital Interface like web and mobile includes technology, digitization, digital preservation techniques

- **Records, Archives and Copyright**

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Methodological Approaches : Property Value Database Segments

- Property value data bases types are as follow : i) Market Value Database (MVD) , ii) Assessed and Appraised Value Data (AVD), iii) Price Value Database (PVD), iv) Cost Value Data (CVD), v) Rated Value Databases (RVD), vi) The Real Property Value Database (RPVD), vii) Hope or Future Value Database (HVD), viii) Best And Highest Use Value Database (BUVD), ix) Assumption and Special Assumption Value Database (ASVD), x) Alternative Use Value Database (AUVD), xi) Forced Sale Value Database (FSVD), xii) Transaction Costs Database (TCD), xiii) Tax Bases Databases (TBD) ,xiv) Synergistic Value or Marriage Value Database (SVD) , xv) Investment Value Database (IVD), xvi) Mortgage Lending Value (MLVD) Database , xvii) Insurable Security Value Database (ISVD) Depreciated Replacement Cost (DRCD) Database . xviii) Trade Related Property Value Database (TRPVD), xix) Development Property Value Database (DPVD), xx) The Existing Asset Value Database (EAVD) , xxi) Green Value Database (GVD) , xxii) Degraded Property Value Database (DPVD), xxiii) Added Value Database etc

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Involving Geospatial Business Intelligence with PVIS

- A data warehouse is a subject oriented, non-volatile, integrated, time variant collection of data in support of management's decisions. Common functions of business intelligence technologies are reporting, online analytical processing, analytics, data mining, process mining, complex event processing, business performance management, benchmarking, text mining and predictive analytics. What is geospatial data and geospatial analytics? When people refer to geospatial data, they are often describing address-related data (a specific address, point of interest, ZIP code, and so on). This data can be matched to a specific latitude and longitude using a process known as geocoding.
- Geocodes for addresses and points of interest can also be integrated with other data sources to enhance analysis in dashboards, visualizations, and more advanced modeling. The Geo Database is a collection of geographic datasets, works in concert with ArcGIS software to provide a rich framework for modeling attributes, spatial and temporal relationships, and transactions.
- Best practices for data modeling and analysis by addressing spatial integrity, attribute integrity, work flow, and scaling. It clarifies geographic data modeling concepts of the geodatabase information models. Geospatial data, sometimes referred to as location data or simply spatial data, is emerging as an important source of information both in traditional and in big data analytics. Geospatial data and geographic information systems (GIS) software are being integrated with other analytics products to enable analytics that utilize location and geographic information. Such analytics are also moving past mapping to more sophisticated use cases such as advanced visualization and predictive analytics. Geospatial data sources include: a). Global positioning system (GPS) data and b). Remote sensing data.

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Database Deployment Software and Applications

- Organizations store feature data in a structured file format such as Autodesk spatial data file (SDF) or SHP. With SDF, organizations benefit from the power of a spatial database without the cost or management overhead. Then organizations can easily extend the reach of their information by using a web mapping application such as Autodesk Map Guide Enterprise to deliver powerful, easy-to-use online maps and related information to audiences of all sizes.
- “With Topobase and Oracle Spatial, we no longer have to maintain multiple data sets, and we have reduced the risk of data entry errors. Autodesk Geospatial makes it easy for engineers and designers to manage and share mapping data—such as regional scale data sets, cadastral information, and utility network data including pipelines, transformers, and valves. Additionally, teams can import and export data sets from many different CAD and GIS file formats—such as ESRI Shapefiles, MapInfo TAB files, MicroStation DGN, and raster data from multiple coordinate systems—and combine it with DWG files and have the information overlay properly.
- Organizations need to move from a file-based environment using DWG, SHP, or SDF to a spatial database environment using the full functionality of a relational database management system (RDBMS). With an RDBMS, hundreds or even thousands of people can create, edit, and manage the same data. With a full RDBMS, organizations get more scalability, as well as added security and the ability to create more sophisticated data models. Using FDO Data Access Technology, Autodesk Geospatial products work natively with spatial data stored in Oracle, Microsoft SQL Server and MySQL, as well as with ESRI’s ArcSDE middleware. As a result, organizations are able to fully use the security, scalability, sophisticated data models, and multi-user read/write power of an RDBMS. AutoCAD Map 3D provides tools that make data and schema migration from SDF or SHP files to a full-scale RDBMS easy.

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More Points to be Discussed

- **PRIVACY**
- **SECURITY**
- **NEED FOR FURTHER RESEARCH**
- **RECOMMENDATIONS**
- **CONCLUSION**

The Entire effort has been devoted to materialize the vision toward achieving the property value information systems as an easy and accessible platform for prompt decision making at all levels of public, private, business and economic sectors. Further more incessant research efforts are also vital to enrich the system in practice. Our pragmatic optimism invites the practitioners’ communities to move forward as to find the solutions to put in practice with a shared, consorted and a well communicated network in the near future.

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Thank You